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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/608,474	06/30/2000	Chuanyou Dong	6009-035	2236

36257 7590 08/26/2004

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SAN FRANCISCO, CA 94111

EXAMINER

DO, CHAT C

ART UNIT	PAPER NUMBER
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2124

DATE MAILED: 08/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/608,474	Applicant(s) DONG, CHUANYOU	
	Examiner Chat C. Do	Art Unit 2124	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 June 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This communication is responsive to Amendment filed 06/03/2004.
2. Claims 1-15 are pending in this application. Claims 1, 6, and 11 are independent claims. In Amendment, claims 1, 6, and 11 are amended. This action is made final.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-15 are rejected under 35 U.S.C. 103(a) as being obvious over Abt et al. (U.S. 4,965,668) in view of Karanovic (U.S. 6,301,596).

Re claims 1 and 5, Abt et al. disclose a method in Figures 2 and 7 for adjusting a noise floor of a filtered signal for low frequencies comprising: providing a digital signal having M bits ($x(n)$ with m bits into 12 in Figure 2); an Exclusive OR product (Figure 7) of N LSB bits (t bits) of the M-bit filtered signal (m bits) to provide a one-bit supplement signal where N is a selected positive number that satisfying $N+1 \leq M$ ($t+1 \leq m$ or $m-t \geq 1$); adding (12) a supplement signal to the M-bit filtered signal to produce a modified filtered signal (output 12); and removing (18) L LSB bits from the modified filtered signal to produce a dithered filtered signal where L is a selected positive number satisfying $L+1 \leq M$ ($L = m-t$ as $y(n)$). Abt et al. do not disclose the input signal has been

digitally filtered. However, it is known in the art as seen in Karanovic's invention that the input signal has been digitally filtered (output 24 in Figure 1 and col. 1 lines 26-30). Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention is made to include add a digital filter for input signal as seen in Karanovic's invention into Abt et al.'s invention because it would enable to manipulate easily the input signal at low frequency by passing through a low-pass filter.

Re claim 2, Abt et al. further disclose M is 30 ($m = 30$).

Re claim 3, Abt et al. further disclose N is 16 ($t = 16$).

Re claim 4, Abt et al. further disclose L is in a range $1 \leq L \leq 16$ ($1 \leq t \leq 16$).

Re claims 6 and 10, they are system claims of claims 1 and 5. Thus, claims 6 and 10 are also rejected under the same rationale in the rejection of the rejected claims 1 and 5.

Re claim 7, it is a system claim of claim 2. Thus, claim 7 is also rejected under the same rationale in the rejection of the rejected claim 2.

Re claim 8, it is a system claim of claim 3. Thus, claim 8 is also rejected under the same rationale in the rejection of the rejected claim 3.

Re claim 9, it is a system claim of claim 4. Thus, claim 9 is also rejected under the same rationale in the rejection of the rejected claim 4.

Re claims 11 and 15, they are article claims of claims 1 and 5. Thus, claims 11 and 15 are also rejected under the same rationale in the rejection of the rejected claims 1 and 5.

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Re claim 12, it is an article claim of claim 2. Thus, claim 12 is also rejected under the same rationale in the rejection of the rejected claim 2.

Re claim 13, it is an article claim of claim 3. Thus, claim 13 is also rejected under the same rationale in the rejection of the rejected claim 3.

Re claim 14, it is an article claim of claim 4. Thus, claim 14 is also rejected under the same rationale in the rejection of the rejected claim 4.

Response to Arguments

5. Applicant's arguments filed 06/03/2004 have been fully considered but they are not persuasive.

a. The applicant argues in page 5 third paragraph for claims 1, 6, and 11 that neither Karanovic, Abt et al., nor the combine discloses an exclusive-OR product bits of the M-bit input signal as claimed.

Based on the present claim language in claims 1, 6, and 11, they do not clearly or explicitly disclose a generation of one-bit supplement signal by forming an Exclusive-OR of **only all** N least significant bits of the M-bit filter signal. Therefore, the examiner believes the cited prior art by Karanovic in view of Abt et al. Figure 7 meets the limitation cited in the present claim wherein the one-bit supplement signal (only one exclusive-OR is used 38) is produced by forming an Exclusive OR (38) of N (in this case $t = N$) least significant bits of the M-bit filter signal (in this case $x(n)$).

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- b. The applicant argues in page 5 fourth paragraph for claims 1, 6, and 11 that it is not understood where the circuit of Abt et al. would have been placed in the circuit of Karanovic by one of ordinary skill in the art.

The examiner respectfully submits that first, both cited references discloses a method and apparatus to generate a dithered product wherein they both require a random number (the dither source circuit in Abt et al. is used to generate that random number as seen in Figures 2 and 7; the random number generator 30 in Karanovic is used to generate that random number as seen in Figure 1) for summing up with the filter signal.

Therefore, it would have been obvious to place the dither source circuit (14) in placed of the random number generator (30) because they are equivalent in view of generating a random number.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- c. U.S. Patent No. 4,652,832 to Jasper discloses a frequency resolution in a digital oscillator.
- d. U.S. Patent No. 4,845,498 to Kubo et al. disclose a wide dynamic range digital to analog conversion method and systems.
- e. U.S. Patent No. 5,696,710 to Hague et al. disclose an apparatus for symmetrically reducing N least significant bits of an M-bit digital signal.

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f. U.S. Patent No. 4,305,133 to Amada et al. disclose a recursive type digital filter.

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chat C. Do whose telephone number is (703) 305-5655.

The examiner can normally be reached on M => F from 7:00 AM to 4:30 PM.

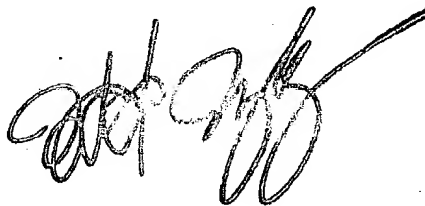
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chaki Kakali can be reached on (703) 305-9662. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Chat C. Do
Examiner
Art Unit 2124

August 10, 2004

A handwritten signature in black ink, appearing to read 'Todd Ingberg', with a long, sweeping horizontal stroke extending to the right.

TODD INGBERG
PRIMARY EXAMINER